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REEXAMINATION CERTIFICATE (3940th)**United States Patent** [19][11] **B1 5,565,109****Sweeny**[45] **Certificate Issued Nov. 23, 1999**

[54] **HYDANTOIN-ENHANCED HALOGEN
EFFICACY IN PULP AND PAPER
APPLICATIONS**

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Primary Examiner—Peter A. Hruskoci**[57] ABSTRACT**

[51] **Int. Cl.⁶ C02F 1/50**

[52] **U.S. Cl. 210/755; 162/161; 210/754;
210/756; 210/764**

Free halogen sources (e.g., sodium hypochlorite and chlorine) added as slimicides in high organic component process streams such as pulp and paper processing are rendered more efficacious by the addition of selected N-hydrogen compounds (namely, 5,5-dimethylhydantoin, 5-ethyl-5-methylhydantoin, cyanuric acid, succinimide, urea, 4,4-dimethyl-2-oxazolidinone, and glycouril) to the process stream. The latter compounds may be added to the process stream before or after the slimicide is added or combined with the slimicide and added directly thereto. The direct use of halogenated hydantoins has also been found to provide improved efficacy relative to free halogen sources. In addition, absorbable organic halogen by-products are reduced.

[56] References Cited**U.S. PATENT DOCUMENTS**

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